

REMARKS/ARGUMENTS

The applicants' attorneys appreciate the Examiner's thorough search and remarks.

Claims 1-12 have been rejected as obvious by Schumacher et al. (Schumacher), U.S. Patent Publication No. 2003/0104198 over Argoitia et al. (Argoitia), U.S. Patent Publication No. 2003/0190473. Reconsideration is requested.

Claim 1 has been amended to call for the following combination:

1. A UV-protective cosmetic preparation for application to skin comprising one or more UV absorbers, characterized in that said cosmetic preparation contains effect pigments, which effect pigments have a laminar structure and at least one protective coating of silicon dioxide, and wherein the effect pigments contain titanium dioxide, said at least one protective coating of silicon dioxide isolating the titanium dioxide from its environment to prevent titanium dioxide induced breakdown of the UV absorbers, wherein said effect pigments align parallel to skin when said preparation is applied to skin, whereby, depending on the angle of incidence of light, the skin would appear to have a different color or a different color shade.

Claim 8 has been similarly amended. Support for the amendments to claims 1 and 8 can be found at page 3, lines 16-31, where it is stated that the laminar structure of the effect pigments allows substantial parallel alignment of the pigments with the skin, whereby depending on the angle of incidence of light, the skin will appear to have a different color or color shade. Thus, a composition according to the present invention exhibits advantageous properties.

Effect pigments have a laminar structure which, in combination with the layer build up of the pigment, generates an angle dependant color impression (specification, page 3, 4th full paragraph).

Schumacher describes coated oxide particles, comprising a metal oxide core and a silicon dioxide coating surrounding the core (Schumacher, paragraph [0016]). Schumacher's particles have an irregular particle shape (not a laminar shape), as depicted in Fig. 2a of Schumacher.

Furthermore, the coated oxide particles according to Schumacher have a primary particle size of between 2 and 100 nm (Schumacher, paragraph [0022]).

The coated metal oxide particles of Schumacher do not generate an angle dependent color impression because of their low structure and irregular particle shape. Furthermore, these particles would not align parallel to skin that would allow for angle-dependent color change when the composition is applied to skin.

Argoitia describes multilayer effect pigments having diffractive structures thereon (Argoitia, abstract).

The pigments of Argoitia have a flake-like structure, having a physical thickness of about 500 nm to about 6 μm with an average diameter of about 50 μm or less and an aspect ratio of the flake's diameter to the flake's thickness of about 10:1, and preferably at least about 25:1 (Argoitia, paragraph [0061]).

The effect pigments described by Argoitia may be used in cosmetic formulations (Argoitia, paragraph [0017]). Argoitia, however, does not teach the use of the pigments thereof in a UV-protective cosmetic composition as well as a photocatalytic activity of titanium dioxide or the prevention of the same. Thus, a skilled person would not be led to use the pigments of Argoitia in a UV-protective cosmetic composition based on the teachings of Argoitia.

Furthermore, a person skilled in the art would not contemplate the replacement of the pigments of Schumacher with the pigments of Argoitia for the following reasons.

The SiO_2 coated metal oxide particles described by Schumacher have a low structure and are, therefore, resistant to sedimentation (Schumacher, paragraph [0040]) in a cosmetic composition. Specifically, the low structure, which results from the reduced primary particle size and the reduced degree of intergrowth of the particles taught by Schumacher, facilitate an easy incorporation of the particles into a sunscreen formulation. After incorporation into the sunscreen formulation, the silicon dioxide coated metal oxide particles are resistant to sedimentation.

Schumacher's particles have a reduced tendency for coalescence compared to uncoated metal oxide particles as, for example, depicted in Figures 2a and 2b. Therefore, Schumacher's particles provide a high degree of scattering and absorption of harmful UV-radiation.

According to Schumacher, the particles should be particularly easy to incorporate into cosmetic formulations and be stable therein (Schumacher, paragraph [0008]). Thus, a person skilled in the art is directed by Schumacher to not use larger particles. Rather, a skilled person

following Schumacher's teaching would use particles that have a low structure, which is achieved by a primary particle size of the coated oxide particle of between 2 and 100 nm and a significantly lower degree of intergrowth of the particles (Schumacher, paragraph [0053]).

The effect pigments described by Argoitia have an aspect ratio (flake diameter to flake thickness) of at least about 10:1 resulting in a minimum width of 5 μm when assuming a minimum thickness of about 500 nm (Argoitia, paragraph [0061]). Thus, the primary particle size of the effect pigments described in Argoitia are 50 times larger than the silicon dioxide coated metal oxide particles in Schumacher's composition. Since the secondary particle size results from agglomeration of particles having a certain primary particle size, the secondary particle size of the effect pigments described by Argoitia would be even greater.

The effect pigments described by Argoitia are significantly larger than the ones in Schumacher's composition. Specifically, the pigments of Argoitia have a physical thickness of about 500 nm to about 6 μm , average diameter of about 50 microns or less and an aspect ratio of at least about 10:1.

A person skilled in the art would not replace the silicon dioxide coated metal oxide particles taught by Schumacher by the metal effect pigments according to Argoitia since these effect pigments have a significantly higher primary particle size, and would not disperse well in a composition according to Schumacher. That is, a skilled person would have to act against the teaching of Schumacher, when incorporating the significantly larger effect pigments taught by Argoitia into a sunscreen formulation.

Furthermore, Argoitia, paragraph [0010], teaches the skilled person, that if the particles are small and not well oriented, the multiple color effect is no longer distinct, resulting in a wash out color range. Thus, Argoitia, paragraph [0010] advises the skilled person not to reduce the size of the laminar flakes.

It should be noted, that an aspect ratio of 10:1 and a primary particle size in the range taught by Schumacher (100 nm) would result in particles having a total thickness of about 10 nm, assuming that the particles of Schumacher can be in the form of platelets. Such a total thickness can not be achieved with the multi-layered structure described in Argoitia. Thus, it is not possible to resize the pigments of Argoitia to meet the requirements of Schumacher.

Aspect ratio is important for the orientation of the pigments. Argoitia, paragraph [0012], discusses the impact of the aspect ratio on the orientation of particles described in the prior art. At an aspect ratio of 10:1 there is a greater preponderance for disorientation of the particles with respect to the surface of a coated article. Thus, pigments according to Argoitia are not likely to align parallel to a person's skin if used in a cosmetic formulation to provide an angle-dependent color change.

In summary, a skilled person could not reduce the size of the pigments of Argoitia to meet the requirements of Schumacher's composition. Even if the size of the pigments could be reduced, the aspect ratio called for by Argoitia would not, in a cosmetic formulation, result in angle-dependent color effects. Therefore, the teachings of Schumacher and Argoitia cannot be combined to result in a composition according to claims 1 and 8. Reconsideration is requested.

Each of the claims not specifically discussed above is a dependent claim that depends from one of claims 1 and 8 either directly or indirectly. Each such dependent claim includes limitations in addition to those of its base claim which in combination with those of its base claim are not shown or suggested by the cited references. Reconsideration is requested.

The application is believed to be in condition for allowance. Such action is earnestly solicited.

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Respectfully submitted,



Kourosh Salehi
Registration No.: 43,898
OSTROLENK FABER LLP
1180 Avenue of the Americas
New York, New York 10036-8403
Telephone: (212) 382-0700